U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 2
Emergency and Remedial Response Division
Program Support Branch
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MEMORANDUM

TO: Grisell Diaz-Cotto, Project Manager
New Jersey Remediation Branch

FROM: Diana Cutt, P.G., Geologist
Program Support Branch, Technical Support Team

DATE: August 2, 2001

RE: Hydrogeologic Investigation at the Diamond Head Oil Refinery Site, Kearny, New Jersey

In response to your request, itemized below are my suggestions for the hydrogeological investigation, which should be implemented using a phased approach, to be conducted as part of the remedial investigation at the Diamond Head site. The EPA Dynamic Workplan website should be consulted before preparing the RI Work Plan (see http://www.epa.gov/superfund/programs/dfa/dynwork.htm). A dynamic work plan is one that allows the project teams to make decisions in the field about how subsequent site activities will progress. Dynamic workplans provide the strategy for how dynamic field activities will take place. As such, they document a flexible, adaptive sampling and analytical strategy. Please contact me at extension 4311 if you have any questions regarding this memo.

1. During site reconnaissance, confirm the existence of MWs 1, 4 and 5. Check them for the presence of NAPL and their general condition (including total depths) to determine if they are suitable for sampling and/or if they require development. Replace locks.

2. Establish the groundwater flow direction in the shallow aquifer by obtaining groundwater elevations in existing wells. These wells may need to be surveyed unless previous survey data are available.

3. Determine the boundaries of the on site landfill. A site visit conducted by EPA on May 30, 2001, revealed extensive vegetative growth at the site, including the area of the landfill, thereby making it difficult to visually identify the boundaries of the landfill. It may be necessary to conduct trenching activities, soil borings or a surface geophysical survey to accomplish this task.

4. Conduct a Geoprobe (or equivalent direct push technology) soil and groundwater investigation to determine: a) the site lithology, b) the nature (samples of the product should be collected and analyzed) and extent of the NAPL plume (see

http://www.epa.gov/superfund/programs/dfa/dirtech.htm for field screening techniques), c) the nature and extent of surface and subsurface soil contamination (approximately 65 surface and 35 subsurface soil samples should be collected*; all samples in the suspected area of the NAPL plume should be screened for the presence of NAPL using fluorescence testing, shake testing or similar method), and d) appropriate locations for monitoring wells that will define the nature and extent of contamination for the dissolved constituent plume. Areas of concern include the former aboveground tanks, former reported underground pits, the NAPL plume, the former building, the landfill and any other area noted on the EPA historical photograph analysis, which should be available in September 2001. Soil and groundwater samples should be analyzed for full TAL/TCL constituents plus PCBs (see Marian Olsen's suggestions on PCB congener analyses). Historical analytical data should be reviewed to determine the usability of the data. Sample numbers and parameters may change based on this data review.

5. Install approximately 6-12** wells to determine the nature and extent of groundwater contamination. Depending on the lithology at the site, deeper wells may be necessary to determine the presence and extent of contamination in the deeper portions of the aquifer (i.e., if no continuous confining unit exists). If the Geoprobe borings did not fully define site lithology, then corings should be collected during well drilling activities. Background wells may be necessary based on the industrial nature of the surrounding area.

6. Conduct aquifer testing to determine hydraulic characteristics. Slugs tests are adequate in the initial stages of the project, however, an aquifer pumping test may be necessary if significant groundwater contamination is found that may require active remediation.

* Surface and subsurface soil sampling numbers are estimated and were based on suggestions provided by EPA's NERL, Las Vegas, NV (July 10, 2001). Samples should not be composited as NERL suggests. Samples should be collected in potential source areas as well as site wide using a grid spacing system as outlined in the NERL report. Also see Marian Olsen's email to you dated August 2, 2001, regarding additional soil sampling suggestions.
** This is an estimated number provided for costing purposes. Once results from existing wells and groundwater Geoprobe sampling is available, the number of wells needed to define the nature and extent of groundwater contamination can be determined.

cc: Vince Pitruzzello
John Prince